

## A New Species of *Amitermes* (Isoptera, Termitidae, Termitinae) From Northeastern Brazil

by

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### ABSTRACT

*Amitermes nordestinus*, sp. n., inhabits the semiarid caatinga domain in the northeast region of Brazil, where it is commonly found in underground tunnels, below and among the roots of epigeic bromeliads. It is a pest of pineapple and sugar cane crops, in the latter case in areas previously occupied by the Atlantic forest.

Keywords: *Amitermes*, Isoptera, Termitinae, Taxonomy, Neotropical.

### INTRODUCTION

The biome of the caatinga (dry savanna) covers most of the Brazilian semiarid region and covers about 10% of the country (Andrade-Lima 1981). The biome domain includes all the nine northeastern States, and the northeast region of the State of Minas Gerais (Andrade-Lima 1981). The caatinga has been little studied and its termite fauna is not an exception.

Species of *Amitermes* occur in the Afrotropical, Australasia, Malagasy, Nearctic, Neotropical, Oceania, Oriental, Papuan and Palaearctic regions (Eggleton 2000), mainly in savannas, deserts and semiarid ecosystems. In Brazil, three species are known: *A. amifer* Silvestri, 1901, found in pastures and orchards in the State of Mato Grosso (Araujo 1970), *A. aporema* Constantino, 1992 inhabits the savannas in the State of Amapá (Constantino 1992), and *A. excellens* Silvestri, 1923 lives in the Amazonian forest (Gonçalves & Silva 1962), as well as in the savannas in the State of Roraima (A. G. Bandeira, personal communication).

A new species of *Amitermes* is described from the caatinga in the States of Paraíba and Bahia, and from sugar cane plantations (in areas previously occupied by Atlantic forest) in the State of Alagoas, Brazil. This is the first encounter with a species of *Amitermes* in the Brazilian northeast and in the caatinga vegetation. The new species is also very

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common in sugar cane and pineapple plantations, where it causes serious damage to the crops.

#### METHODS

Specimens were measured with an ocular micrometer and drawn with the aid of a camera lucid coupled to a stereomicroscope. Photographs were taken with a mirror reflex camera adapted to a stereomicroscope. Measurements are self-explanatory and follow the standardization presented by Roonwal (1969, Roonwal's number 5, 17, 21, 34, 35, 65, 68 and 85). The left mandible index of the worker was defined by Emerson (1960) as the linear distance between the tips of the apical and the first + second marginal teeth divided by the linear distance between the tips of the first + second and the third marginal teeth. For a correct determination of the left mandible index, we followed the recommendations of Fontes (1998, 315-316) and took the measurements from unmounted mandibles, after the dentition border was horizontally positioned; for this, the mandibles were opened in the heads of entire workers whose bodies were carefully handled inside a Petri dish full of alcohol and half filled with sand, in which the workers were partially buried.

#### *AMITERMES NORDESTINUS*, SP. N.

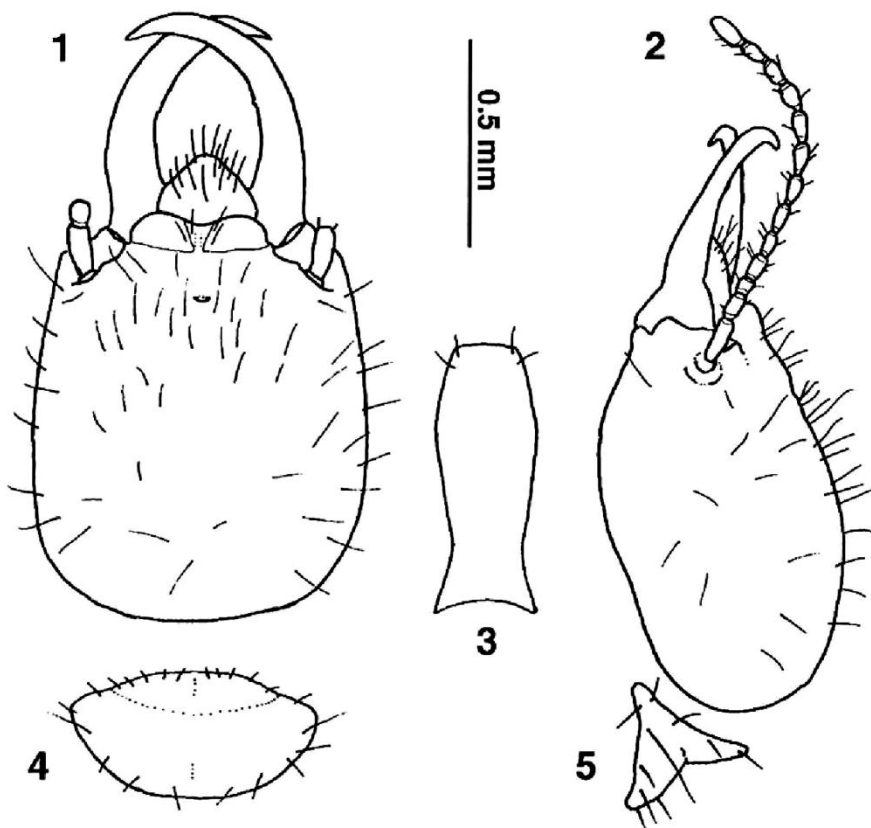
*Type material.* BRAZIL. State of Bahia: Itaberaba (type locality), Fazenda União, 18.VI.2001, A.C.S. Mélo col., type colony number UFPB 1317, holotype (soldier) and paratypes (soldiers and workers), number UEFS 0001 and LRFC 2194, paratypes (soldiers and workers); IX.1999, A.C.S. Mélo col., number LRFC 1936, paratypes (4 soldiers); 21.II.2000, A.C.S. Mélo col., number UFPB 1370 and UEFS 0002, paratypes (soldiers and workers); 21.II.2000, C.C. Santana col., paratypes (soldiers and workers), number LRFC 2180. State of Paraíba: São João do Cariri (Experimental Station), 26.IV.2001, A.C.S. Mélo col., number UFPB 1319 and UEFS 0002, paratypes (soldiers and workers); 30.V.2001, A.C.S. Mélo col., number LRFC 2195, paratypes (soldiers and workers); 30.VI.2001, A.C.S. Mélo col., number UFPB 1371, LRFC 2179 and UEFS 0004, paratypes (soldiers and workers). State of Alagoas: Boca da Mata (Usina Triunfo), 15.V.1996, L. R. Fontes col., numbers LRFC 1728, 1730 and 1733, paratypes (7 soldiers, workers). Holotype in the entomological collection of the Universidade Federal da Paraíba (UFPB). Paratypes also in the entomological collection of the Universidade Estadual de Feira de Santana (UEFS) and L. R. Fontes collection (LRFC).

*Alate.* Unknown.

*Soldier* (Figs. 1-6). Head capsule pale yellow to yellow, in dorsal view much paler in the broad central area occupied by the frontal gland;

mandibles pale brownish-yellow from the base to the marginal tooth, yellow-brown near the tooth and gradually darker to the apex. Antennae and labrum pale yellow. Postclypeus pale yellow to yellow. Postmentum pale yellow. Pro-, meso- and metanotum yellow to dark yellow. Tergites pale yellow and transparent. Sternites colorless and transparent. Legs yellowish.

Head capsule (Figs. 1-2) with sparse microscopic bristles, distant each other more than their lengths; such bristles are much more sparse and almost indistinct in the ventral side. Anterior third of head capsule with many long bristles in the dorsum, distant each other less than their lengths. In this region, 5-6 six bristles are roughly aligned in front of the frontal pore, and 6-8 posteriorly to the pore. Lateral sides and back half of the head capsule with scattered long bristles. Labrum with two long



Figs 1-5. *Amitermes nordestinus*. Soldier: 1, head, dorsal; 2, head, lateral; 3, postmentum; 4, pronotum, dorsal; 5, pronotum, lateral.



Fig 6. *Amitermes nordestinus*. Soldier: 6, mandibles of 3 soldiers, showing variation in the development of the marginal dentition. Similar variation is common in soldiers of the same colony.

bristles near tip and eight to ten long bristles on the surface. Postclypeus with 4 bristles placed along the median depression. Postmentum (Fig. 3) with two long bristles at each anterior angle. Pronotum (Figs. 4-5) with a row of submarginal long bristles, and one much longer submarginal bristle posteriorly to each lateral angle; surface with scattered microscopic bristles. Meso- and metanotum with a row of submarginal long bristles at the lateral and posterior margins, and one much longer submarginal bristle at each side; surface of metanotum with scattered microscopic bristles. Legs with scattered short, medium and long bristles. Middle tibia with a thicker, subapical bristle above the third (outer) apical spur. Tergites and sternites with numerous short bristles on the surface and a row of scattered long bristles at the posterior margin.

Head capsule slightly longer than wide, largest in the middle; sides slightly convex; posterior angles broadly rounded. In lateral view (Fig. 2), dorsal and ventral lines convex. Frontal pore distinct in dorsal view, approximately on the anterior fourth of the head capsule and slightly posterior to the antennal sockets; in lateral view, the frontal pore is located in a small depression of the dorsal line (Fig. 2). Labrum short, sides converging towards the rounded apex. Mandibles (Figs. 1, 6) slender, narrowing towards the pointed apex. They are more strongly bent in the apical third and are about  $2/3$  the length of the head capsule. Each mandible has a very reduced marginal tooth (almost indistinct in some specimens; Fig. 6), located  $2/5$  from the base of the mandible and protruding only slightly on the cutting margin; the marginal tooth is a little more distinct in the right mandible. The cutting margin between the marginal and the apical teeth of each mandible is very finely serrated, but this is visible only under favorable light. Postclypeus about three times as wide as long, surface slightly convex in profile,



anterior margin emarginated in the middle, posterior margin scarcely recognizable, median longitudinal line indistinct and represented by a shallow depression. Postmentum strongly inflated and convex in profile, about 2.5 times longer than broad, sides converging slightly towards rear. Antennae (Figs. 2, 6) with 13 articles: I longer than II; II, V and VI about the same length, a little longer than IV and about twice longer than III. Length of antennae approximately equal to the width of head capsule, and they extend far beyond the mandibles. Anterior margin of pronotum rounded or very weakly emarginated in the middle; lateral angles obtuse and rounded; lateral and posterior margins convex. Tibial spurs 3:3:2, but third (outer) spur small, especially in the middle tibia.

Measurements (in millimeters) of 10 soldiers from 4 samples. Lateral length of head without mandibles 0.81-0.93; width of head 0.78-0.87; height of head without postmentum 0.55-0.71; length of pronotum 0.26-0.31; width of pronotum 0.53-0.55; length of left mandible 0.44-0.51; length of hind tibia 0.55-0.70. Proportions: length of head without mandibles/width of head 1.12; length of left mandible/length of head without mandibles 0.62; length of pronotum/width of pronotum 0.48.

**Worker.** Head capsule pale yellow, lighter dorsally. Antennae pale yellow. Pronotum pale yellow, slightly darker than head capsule. Meso- and metanotum with same color as pronotum. Abdomen transparent. Head capsule with many short and medium bristles, closer in the middle of the head. Postclypeus with many short bristles on the surface, and one long bristle in the middle of each half plate. Labrum with many long bristles. Pilosity of thorax, abdomen and legs as in the soldier. Head capsule rounded. Postclypeus moderately inflated. The mandibles follow the pattern of the genus (Fig. 7); index of left mandible 0.37-0.44. Antennae with 13 articles: I longer than II; II and VI about the same length and slightly longer than IV and V; III is the shortest article.

Measurements of 10 workers from 4 samples. Lateral length of head without mandibles 0.62-0.74; width of head 0.76-0.79; postclypeus: length 0.20-0.23, width 0.31-0.39; length of fore tibia 0.47-0.54; abdomen: length 1.65-2.00, width 0.93-0.98.

**Comparisons.** Among the Brazilian species of *Amitermes*, only *A. aporema* is as small as *A. nordestinus*. The soldier of the new species is easily distinguished by its head, that is longer when compared to its width, and has sides more convex that converge less towards the front.

**Biology and pest status.** In natural caatinga ecosystems, specimens were collected below epigeic Bromeliaceae, whose lower and subterranean parts were being consumed by the termites, up to 5cm depth. In São João do Cariri, they were found below epigeic specimens

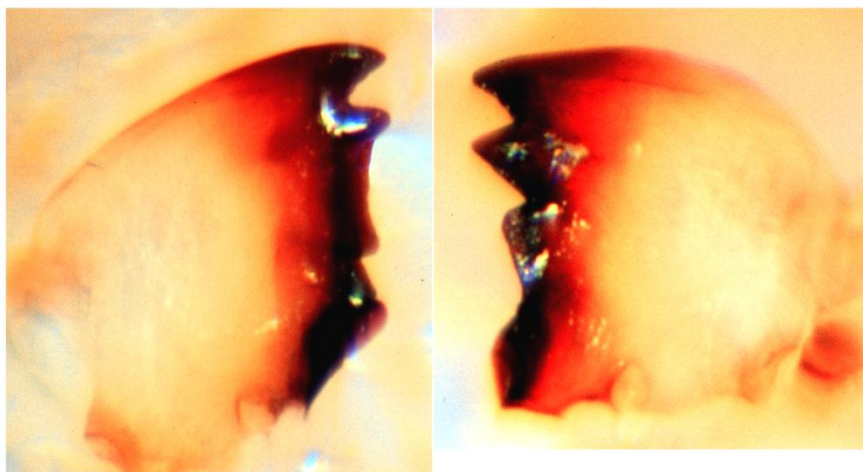


Fig 7. *Amitermes nordestinus*. Worker, mandibles.

of native *Bromelia laciniosa*, and in Itaberaba below planted *Ananás cumosus*. The soil was excavated and narrow tunnels were found among the roots, without nest structures.

The new species is devastating to the pineapple culture (*A. cumosus* under no irrigation in Itaberaba, in the semiarid area of the northeast Brazil (Sanches *et al.* 2000). The termite destroys the basal portion of the stems, where the roots are formed, causing underdevelopment of the plants and strongly reducing the crop production. No other termite species was collected from the roots of *A. cumosus* in the control experimental fields in Itaberaba.

The termites collected in Boca da Mata were eating plant debris in the soil in a sugar cane plantation and also attacking sugar cane tholes. The new species is also a destructive pest of sugar cane in the northeastern region of Brazil (Novaretti & Fontes 1998: 165, figs. 1-3 and 5 illustrate damages caused by *Amitermes nordestinus* and by an unidentified species of the genus), well distributed in the region and including, beyond the mentioned States, also the States of Pernambuco and Rio Grande do Norte (W.R.T. Novaretti, personal communication). Dr. Novaretti has conducted a large series of field control tests with chemical insecticides applied to the soil, in northeastern sugar cane plantations. He has confirmed the pest status of species of *Heterotermes*, *Amitermes* (including *A. nordestinus*), *Cylindrotermes* and *Nasutitermes*. *A. nordestinus* is popularly called "the very little termite" (cupim miudinho in Portuguese) by sugar cane field workers and agronomists.

The nest of *A. nordestinus* is probably subterranean and remains unknown. Evidence towards this condition was obtained in São João do

Cariri, where 40 cow dung remains were inspected and none was attacked by the termite. However, when 100 blocks of cow dung were buried at a depth of 10 cm and 2 meters apart, and then inspected monthly for three consecutive months (May to July 2001), *A. nordestinus* was found in 10 of them.

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